by the development of the rounded and ribbed involuted border. It appears clear to me that this thick involuted structure is an outgrowth from the upper surface of the leaf, and which crossed the base of the cuspidate apex, *a*, without materially modifying it; and as it developed in a similar manner round the base of the distal surface of the lid *fg*, it contracted that base so as to reduce the attachment of the lid to the pitcher to very small dimensions. If the explanation is as correct as I believe it to be, the apex *a* of the middle dorsal wing is also the true apex of the leaf, whilst the involuted margin of the pitcher and the whole of its lid are equally outgrowths from its upper surface.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—In a Convocation to be held in the Sheldonian Theatre on Wednesday, June 13, at twelve o'clock, it will be proposed to confer the degree of D.C.L. *honoris causâ* upon Lord Rayleigh, M.A., F.R.S., Professor of Experimental Physics and Honorary Fellow of Trinity College, Cambridge, and Sir Frederick A. Abel, K.C.B., F.R.S.

In a Convocation held on June 5 the following decree was submitted to the House:—"That the Curators of the University chest be authorised to expend a sum not exceeding 10,000*l.* in the erection of a laboratory, working-room, and lecture-room for the Waynflete Professor of Physiology, and in providing fixtures, warming apparatus, and gas for the same," which was carried by 88 to 85.

CAMBRIDGE.—The Geological Museum Syndicate recommend the combination of a new chemical laboratory with the Sedgwick Geological Museum, and believe that no better site will be available than the Downing Street frontage. They have asked permission to obtain plans and estimates in accordance with this proposal.

The Special Board for Medicine recommend the combination of the subjects of botany and comparative anatomy, now taken in the 1st and 2nd M.B. respectively, into one—elementary biology, which is to include much less than the two separate subjects. They propose that chemistry and physics in the 1st M.B. may be taken at a distinct period from the elementary biology, if candidates prefer it, and also that human anatomy and physiology in the 2nd M.B. may be taken at a distinct time from pharmacy and pharmaceutical chemistry. They also propose to discontinue classifying candidates, which has only been adopted of late years, and to publish merely alphabetical lists.

The university Local Lectures in populous centres have during the past winter, as usual, included numerous courses on science subjects, including chemistry and electricity, by Messrs. C. M. Thompson and S. L. Hart; Europe in Prehistoric Times, by Mr. J. E. Marr; Geology and Physical Geography, by Mr. W. W. Watts; Physics of the Earth, by Prof. Teall, &c.

LONDON.—On Tuesday afternoon last a large number of the friends of the medical education of women met at the Ladies' Medical College in Brunswick Square at the ceremony of presenting the prizes to the successful students of that institution. Countess Granville presided, and in the course of the proceedings Mr. Stansfeld, M.P., referred to the financial condition of the college as satisfactory. Two gentlemen from India spoke on the recent movement in Bombay to secure qualified medical women for that country, and referred to the immense value of a knowledge of medicine as an adjunct to missionary effort. Mrs. Garrett-Anderson, M.D., as Dean of the College, supplied some statistics of its progress, and Mrs. Fawcett, in proposing a vote of thanks to Countess Granville, dwelt on the assistance which the movement for placing a medical training within reach of women had received from Earl Granville in his capacity as Chancellor of the University of London.

WITH a view to encourage the study of veterinary science, the Lieutenant-Governor of Bengal has resolved to offer two prizes—one of 50*l.* and the other of 20*l.*—for competition by holders of Agricultural Scholarships from Bengal, studying in the Royal Agricultural College, Cirencester.

SCIENTIFIC SERIALS

THE *American Journal of Science*, No. 149, May, 1883.—Observations of the transit of Venus, December 6, 1882, at Princeton, New Jersey, and South Hadley, Massachusetts, by Prof. C. A. Young. Two sets of measurements of the planet's diameter, and some spectroscopic observations were made by the author and Mr. McNeill. During the transit 191 photographs were taken by Prof. Brackett and assistants. Of these 40 were first class, 30 worthless, the rest of all grades of excellence. The planet's atmosphere was seen by all observers at Princeton. But no satellite, spots, or marks were detected upon the planet's disk.—Notes on the occurrence of certain minerals in Amelia County, Virginia, by Wm. F. Fontaine. These have been brought to light during the excavations carried on for some years past for the purpose of obtaining mica. They are chiefly feldspar, beryl, fluorite, columbite, garnet, orthite, microlite, monazite, and helvite.—On the surface limit or thickness of the continental glacier in New Jersey and the adjacent States, by J. C. Smock.—Contributions to the geological chemistry of Yellowstone National Park, by F. Leffmann and W. Beam.—Notes on American earthquakes, with records from June, 1879, to end of December, 1882, by Prof. C. G. Rockwood.—A four years' record of earthquakes in Japan, studied in their relation to the weather and seasons, by Dr. Thos. H. Streets, U.S. Navy. The shocks are tabulated, with remarks on the state of the barometer and temperature. Three charts show the relation between the height of the barometer and the earthquakes.—Observations on the fossils of the metamorphic rocks of Bernardston, Mass., by R. P. Whitfield.—On De Candolle's "Origin of Cultivated Plants," with annotations upon certain American species, by Asa Gray and J. Hammond Trumbull (part ii.).

Annalen der Physik und Chemie, 1883, No. 5.—Experimental researches on the elliptical polarisation of light by reflection from surface-coloured bodies, with ten illustrations, by Julius Meikel. —A new radiometer, described and figured by C. Bauer.—The radiation of rock-salt under various temperatures, by the same author.—On the generation of heat in the absorption of gases by solids and fluids, with illustration, by P. Chappuis.—Some remarks on the action of air condensed on glass surfaces, by W. Voigt.—On the theory of the longitudinal impact of cylindrical rods, by the same author.—Observations on the action of quicksilver drops falling in thermometrical tubes, by Paul Volkmann. —On the galvanic resisting-power of psilomelan, by Hugo Meyer.—Remarks on W. Siemens' theory of luminosity, by W. Hittorf.—On a hitherto unrecorded phenomenon accompanying electric discharges, with three illustrations, by Heinrich Hertz. —On the action of platinum, palladium, gold, coal, and aluminium in nitro-muriatic acid, by Carl Fromme.—On the dynamometrical method of determining the ohm, by J. Fröhlich.—On the measurement of local variations in terrestrial magnetic horizontal intensity, by F. Kohlrausch.—Researches in the electromagnetic phenomena of rotation, with three illustrations, by Friedrich Koch.—Experiments in connection with the theory of the Nobili-Guébhard rings, by W. Voigt.—Measurement of the diminution of sound in the telephone, by K. Vierordt.—On electric undulatory movements, with illustration, by A. Overbeck. —On the selective absorption of solar energy, with two plates, by S. P. Langley.—Remarks on C. Bohn's treatise on "Absolute Dimensions," by Paul Volkmann.—An account of Foucault's experiment with the pendulum, by A. Schuller.

No. 6.—On the measurement of the refractive relations of coloured fluids, with four illustrations, by C. Christiansen.—On the determination of the power of emission and absorption of heat in bodies, by the same author.—Observations on Norman Lockyer's theory of dissociation, by Hermann W. Vogel.—Researches on the variation of temperature in the pole-plates of a voltameter during the transmission of electric currents, with two illustrations, by E. Edlund.—Carl Fromme's electrical investigations (continued): Experiments on the condensation and absorption of hydrogen by platinum and palladium; *résumé* and further explanation of the results contained in the two previous sections. —Remarks on A. Kundt's treatise on "The Optical Action of Quartz in the Electric Field," by W. C. Röntgen.—On some experiments with static electricity, with numerous illustrations, by V. Dvorák.—Some remarks on the unipolar conduction of solid bodies, by F. Braun.—On the elliptical polarisation of the heat rays reflected by metals, by H. Knoblauch.—On the fluorescence of the vapour of iodine, by E. Lommel.—On the thermodynamic equilibrium of vapour mixtures, by Max Planck.—On some modifications of the pyknometer, by G. W. A. Kahlbaum.—On the selective absorption of solar energy (continued), with fresh observations on the invisible prismatic spectrum, by S. P. Langley.

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THE *Beiblätter* to part 4 contains papers on the necessity of introducing certain modifications into the study of mechanics, and eliminating diverse problems from them, by Yvon Villarceau.—On the influence of temperature on manifestations of molecular energy, by A. Millar.—On the inner pressure and energy of superheated vapours, by G. Schmidt.

Journal de Physique Théorique et Appliquée, April, 1883.—Methods for determining the ohm, by Marcel Brillouin.—On the solidification of phosphorus and other substances in superfusion, by M. D. Gernez.—On the theory of colourless curves in double refractive crystals, by J. Macé de Lépinay.—A new hygrometer condensing internally, described and figured by A. Crova.—A new electrocapillary translator, described and figured by E. Debrun.—On the reading of a system of two electrodynamic machines, by A. Potier.

Revue Internationale des Sciences, February, 1883, contains articles:—On the contagiousness of tubercle.—On the Khouds, by Élie Reclus.—On the dangerous properties of finely-divided coal-dust, by Prof. Abel.—On the adulteration of food in Paris, by M. Egasse.—Medical anthropometry from the point of view of aptitude for military service, by M. Jansen.—Proceedings of the Academy of Sciences, Paris.

Journal of the Asiatic Society of Bengal, Vol. li. Part II, No. 4, 1882, contains:—On a new species of Hipparchia from the North-West Himalayas, by Major G. F. L. Marshall.—Notes and drawings of the animals of various Indian land mollusca, by Lieut.-Col. H. H. Godwin-Austin (Pl. 5).—Some further results of sun-thermometer observations, with reference to atmospheric absorption and the supposed variation of solar heat, by H. F. Blanford.

THE *Archives des Sciences Physique et Naturelles* for March contains papers by M. Schneebeli, on the determination of the absolute capacity of some condensers in electromagnetic measurement; by Raoul Gautier, on the great comet of September, 1882; by Dr. Julius Maurer, on the theory of the atmospheric absorption of solar radiation.—M. Casimir de Candolle has an interesting biographical notice of the eminent naturalist Emile Plantamour.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, April 19.—"On the Limiting Thickness of Liquid Films." By A. W. Reinold, M.A., Professor of Physics in the Royal Naval College, Greenwich, and A. W. Rücker, M.A., Professor of Physics in the Yorkshire College, Leeds.

The previous investigations of the authors have shown that the specific electrical resistance of a soap film thicker than 374×10^{-6} mm. is independent of the thickness, and that the composition of films formed of M. Plateau's "liquide glycérique" may be largely altered by the absorption or evaporation of aqueous vapour which attends even slight changes in the temperature or hygrometric state of the air (*Phil. Trans.* Part II. 1881, p. 447).

In the present paper they describe a modified form of the apparatus which they previously employed. The glass case in which the films are produced is surrounded by water, and additional precautions are adopted for maintaining the aqueous vapour within it at the tension proper to the liquid of which the films are formed. These changes have entailed considerable alterations in details, but the main features of the apparatus remain unaltered. The new form, however, possesses the important advantage that the temperature and hygrometric state of the air in contact with the films can be kept perfectly constant during the progress of the experiments. With this apparatus a number of measures have been made of the electrical resistance of films which have thinned sufficiently to show the black of the first order of Newton's rings. To deduce the thickness from the resistance, it is necessary to assume that the specific resistance of the films is the same as that of the liquid in mass. The authors' previous experiments do not enable them to assert the truth of this assumption for such thin films, and it was therefore important to ascertain by an independent method whether it might be taken as approximately true.

For this purpose between fifty and sixty plane films were formed in a glass tube 400 mm. long and 18 mm. in internal diameter. The tube was closed by pieces of plate glass and placed in the path of one of the interfering rays in a Jamin's "interferential refractometer." When the films had become black, a known number were broken by bringing an electromagnet near to the tube and thus moving some sewing needles which had been inclosed along with the films. The mean thickness of the films was deduced from the displacement of the interference "fringes" caused by their rupture.

Two liquids were observed, viz. M. Plateau's "liquide glycérique," and a soap solution containing no glycerine. The following are the means of the various groups of observations:—

Liquid.	Method.	Mean thickness in terms of 10^{-6} mm.
"Liquide glycérique" ...	Electrical... ...	11·9
	Optical	10·7
Soap solution	Electrical... ...	11·7
	Optical	12·1

The agreement between these numbers is sufficiently close to make the fact that they are approximately correct unquestionable, and to prove that the mean thickness of a black film is nearly the same for both liquids.

The electrical observations afford a means of comparing the thicknesses of different black films and observing whether or not the thickness of the black portion of any particular film alters as its area increases. The results obtained in the paper and in a previous preliminary investigation on the same subject (*Proc. Roy. Soc.*, 1877, No. 182, p. 334) are summed up by the authors as follows:—

(1.) Persistent soap films which thin sufficiently to exhibit the black of the first order of Newton's rings invariably display an apparent discontinuity in their thickness at the boundary of the black and coloured portions.

(2.) The whole of the black region, at the time of or very soon after its formation, is of uniform thickness.

(3.) This thickness remains unaltered in any film, whether the coloured parts of the film are thinning or thickening, increasing or diminishing in extent.

(4.) It is different for different films, but no connection has been traced between its magnitude and the time which elapses between the first formation of the film and the first appearance of the black, or between either of these and the time of observation.

(5.) The mean values of this thickness are the same to within a fraction of a millionth of a millimetre, whether the films are plane or cylindrical, in contact with metal or with glass, formed of soap solution alone, or with the addition of more than two-fifths of its volume of glycerine.

(6.) Two totally independent methods of measuring the thickness of the black portions of the films give completely concordant results.

(7.) The mean value of the thickness calculated by giving equal weight to the results of the electrical and optical experiments is $11·6 \times 10^{-6}$ mm. The extreme values formed were $7·2 \times 10^{-6}$ and $14·5 \times 10^{-6}$ mm.

The smaller of these quantities is therefore a limiting thickness to which a soap film in air saturated with the vapour of the liquid from which it is formed rarely attains, and below which none of the films observed by us have thinned.

Linnean Society, May 24.—Anniversary Meeting.—Sir John Lubbock, Bart., president, in the chair.—Mr. R. McLachlan read for the Audit Committee the statement of receipts and payments for the year; 750*l*. had been invested, and a balance at banker's (April 30) remained of 514*l*. 8*s*. 7*d*.—The Secretary (Mr. B. D. Jackson) read his annual Report. Since the last anniversary 11 Fellows and 1 foreign member had died and 11 withdrawn, while 54 new Fellows had been elected. Between purchase, exchange, and donations, 407 volumes and 442 separate parts had been added to the library.—Mr. G. J. Romanes, on behalf of the subscribers, formally handed over the portrait of Charles Darwin, painted by Mr. J. Collier, its exhibition at the Royal Academy last year having then prevented its presentation.—A bust of the late Prof. Louis Agassiz by the American sculptor, Mr. Hiram Power, was handed over by Prof. Allman to the Society as a present from the sculptor's son, Mr. H. Power of Florence.—An engraving from Gainsborough's painting of the old English naturalist, Mr. Thomas Pennant, was presented by Mr. Howard Saunders in the name of Mrs. Alston, as a bequest from her son, the Society's late secretary, Mr. E. R. Alston.—The President then delivered his anniversary address, commenting generally on the events of the past year, with special reference to their bearing upon the Society; in congratulating

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